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THE BROWN-TAIL MOTH

(*Nygmia phaerrhoea* (Don.)

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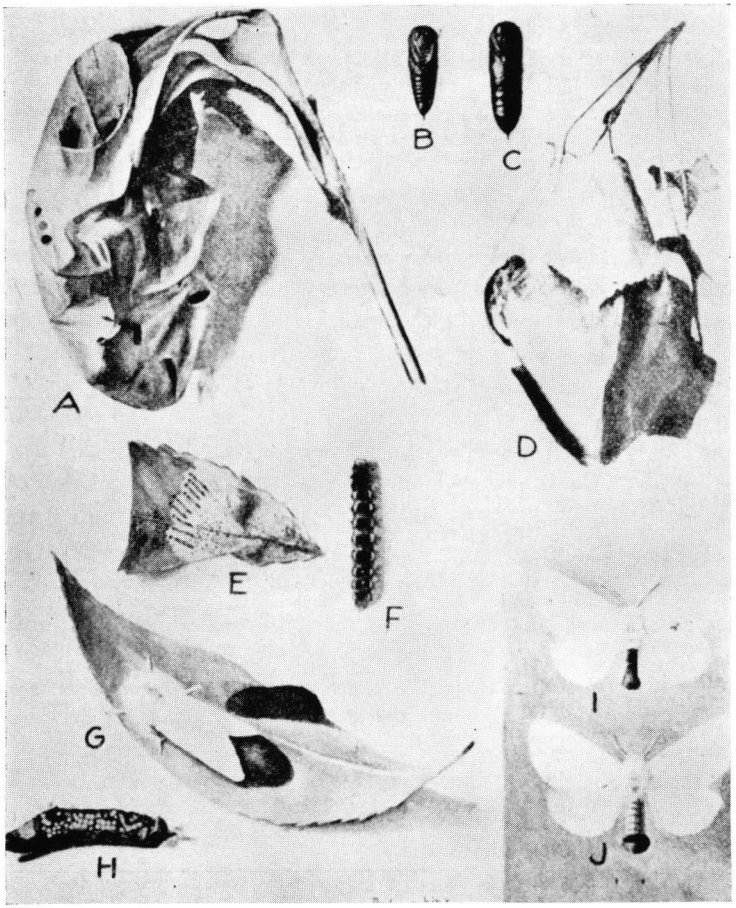

Life stages of the brown-tail moth: A, Winter nest; B, male pupa; C, female pupa; D, cocoon in leaves; E, young caterpillars on leaf; F, full-grown caterpillar; G, female depositing eggs on a leaf, and also egg mass on leaf; H, egg mass removed from leaf with some of the eggs exposed; I, male moth; J, female moth. All less than three-fourths natural size. (From U. S. Dept. Agr. Circ. 464.)

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THE BROWN-TAIL MOTH

(*Nygmia phaerrhoea* (Don.)

History and Distribution:—The brown-tail moth, a native of Europe, was first found in the United States in Somerville, Mass. Attention was attracted to the presence of this insect in the spring of 1897, when unrecognized caterpillars were found feeding on pear leaves. As soon as the identity of these caterpillars was established, attempts were made to determine when the insect had been introduced and where. It was impossible to obtain conclusive information, but from the few clews uncovered it seemed likely that the species had been accidentally introduced on nursery stock about 1890.

From the time of discovery the insect spread rapidly until 1915, when its range included most of New England east of the Connecticut River except northern portions of New Hampshire and Maine. Also small sections of eastern Vermont and a few towns west of the Connecticut River in Massachusetts and Connecticut were found infested. Rather extensive control work carried on by the States and by the Federal Government, supplemented by various natural agencies, such as low winter temperatures, parasitic insects, and disease, decreased the infestation both in degree and in extent so that at present the area of infestation is much less extensive than in 1915. Through the use of emergency funds the Federal Government, in cooperation with the States, has conducted a number of control projects on this insect since 1933, and this work, together with work done by State and local authorities, has resulted in a material decrease in the infestation over much of the present infested area, which now comprises the southern third of Maine, the southern two-thirds of New Hampshire, a small portion of eastern Vermont, and the eastern half of Massachusetts.

Host Trees:—Caterpillars of the brown-tail moth feed extensively on the foliage of apple, pear, cherry, oak, willow, and a number of other common deciduous trees and shrubs. When very abundant, they may defoliate areas of oak woodland. They never attack any of the conifers.

Injury:—The greatest injury results from feeding by the over-wintered caterpillars in the spring. If abundant, they consume the leaves almost as fast as they develop, so host plants do not get a chance to put out foliage until after the caterpillars have completed their growth and ceased feeding. Late in the summer and early in the fall the young caterpillars feed before hibernating, but this feeding results in little damage to the trees, as most of the growth has been completed for the season. The caterpillars are clothed with barbed, poisonous hairs which create an exceedingly irritating rash when they come in contact with the human skin. This causes so much discomfort that many persons are compelled to keep away from infested areas during the time the caterpillars are feeding.

Description:—Both male and female moths are pure white with the exception of the abdominal tips, which are covered with brown hairs. The female is considerably larger than the male. The eggs are laid in clusters of from 200 to 400 on the under sides of host-plant leaves. These eggs are covered with brown hairs from the body of the female and are usually laid in July. The full-grown caterpillar is about 1 1-2 inches long and quite hairy. The head is light brown; the body is dark brown, with a broken white line on each side and two reddish spots on the back near the posterior end. After the caterpillars are through feeding they spin rough cocoons, and in these they change to pupae. The pupae may be formed singly or in masses. Sometimes leaves of the host plant are drawn together in these masses of pupae (fig. 1, D).

Life History:—The moths usually begin to appear the first week in July. They mate immediately and lay their eggs on the under sides of the leaves. Hatching begins about the middle of August. The small caterpillars feed on the leaf surfaces, and, at the approach of cold weather, construct the winter webs in which they will stay until spring. These webs are formed of silk secreted by the caterpillars, and leaves are pulled in and bound with silk. In the spring, as soon as the buds begin to develop, the caterpillars leave the hibernating webs and begin to feed. They increase in size rapidly and become full-grown late in June. They then pupate and emerge as adults about 2 weeks later.

Means of Spread:—Adults of both sexes are rather strong fliers, and dispersal usually takes place in this way. This insect may be spread by the transportation of trees or shrubs on which the winter webs are present, and some short-distance spread may result from the carrying of caterpillars by automobile or other conveyances.

Natural Control:—Infestations are sometimes considerably reduced through a fungous disease which attacks the caterpillars, particularly when they are nearly full grown. This disease is variable in its result, as it is effective only when weather conditions are suitable for its growth. A num-

ber of insect enemies of the brown-tail moth were introduced from Europe by the Bureau of Entomology and Plant Quarantine of the United States Department of Agriculture in cooperation with the State of Massachusetts. These have helped to reduce the infestations. Extremely low temperatures in the winter often kill many of the small caterpillars in hibernating webs if these are unprotected by snow or other covering.

Artificial Control:—The most effective control measure is to cut off the winter webs and destroy them before the caterpillars emerge in the spring. This method is slow and laborious when infestations are heavy, but it is much more satisfactory than any other. Spraying with lead arsenate, the usual method of control for leaf-feeding insects, is not satisfactory in the spring unless there is only a light infestation, as the caterpillars feed so rapidly that they do not permit the trees to put out sufficient foliage to hold the spray material. For orchards where there are large numbers of newly hatched caterpillars late in the summer some measure of control can be attained by spraying, particularly the foliage on the terminal shoots, with powdered lead arsenate at the rate of 3 pounds to 100 gallons of water. This type of spray, while it will reduce the infestation if applied properly, has its disadvantages in that there is danger of spray residue on the fruit. As a decided help in establishing control and preventing reinfestation of orchards that have been cleaned up, the removal and destruction of useless apple trees, wild cherry trees, and other favored food plants is advocated.

REFERENCES

Burgess, A. F., and Baker, W. L. — The Gypsy and Brown-tail Moths and Their Control. U. S. Dept. Agri. Circ. 464. 37 pp., illus. 1938.